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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,067	03/31/2004	Steven T. Fink	244568US6YA	4640

22850 7590 12/13/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

SHARP, JEFFREY ANDREW

ART UNIT	PAPER NUMBER
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3677

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/813,067	Applicant(s) FINK, STEVEN T.	
	Examiner Jeffrey Sharp	Art Unit 3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36,38-43 and 48-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36,38-43 and 48-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2005 and 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

[1] This action is responsive to Applicant's request for continued examination filed on 13 October 2005, with regard to the Advisory Office action mailed on 4 October 2005.

Status of Claims

[2] Claims 1-36, 38-43, and 48-55 are pending.

Claim Rejections - 35 USC § 112

[3] Claims 38 and 39 were previously rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant has successfully addressed the issue(s) of indefiniteness in the amendment filed on 14 September 2005. Accordingly, the rejection of the claims under 35 U.S.C. 112, second paragraph has been withdrawn.

Response to Arguments/Remarks

[4] Claim(s) 1-36 and 38-48 were previously rejected under 35 U.S.C. 103(a) as being obvious over several prior art references of record.

Applicant's arguments/remarks with regard to this reference have been fully considered, but are moot in view of the amendment to each independent claim 1, 8, 23, and 30. A new grounds of rejection is made of record below.

New Grounds of Rejection

Claim Rejections - 35 USC § 112

[5] The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

[6] Claim 54 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear how *"at least a portion of the fastening component does not include said stem of the fastening component"*.

Claim Rejections - 35 USC § 103

[7] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[8] Claims 1-8, 12-15, 20-25, 29-32, 38, 39, 48-53, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443.

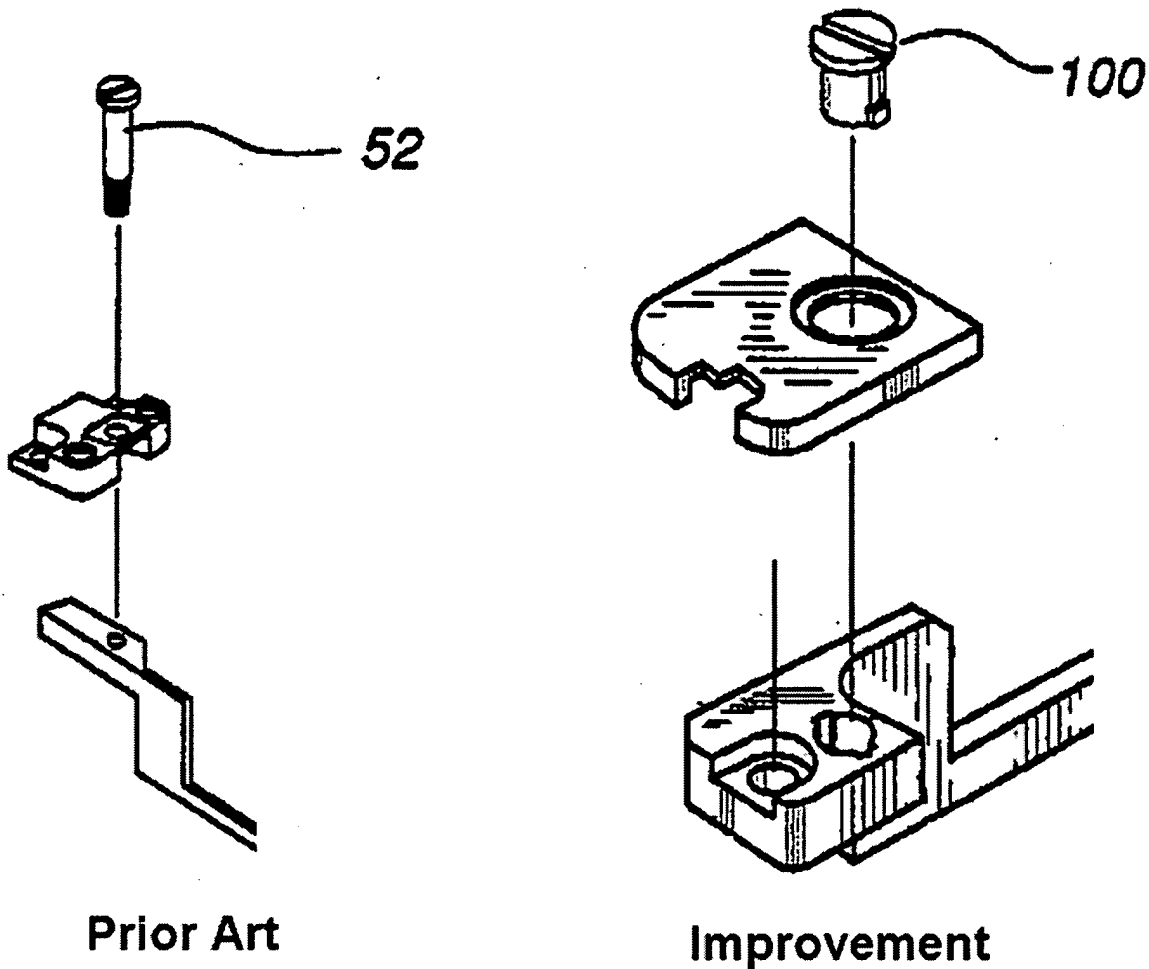
Applicant suggests that it is already known to connect a gas inject plate to an electrode plate via a bolt.

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However, the prior art disclosed by Applicant fails to disclose expressly, a (quarter-turn or the like) fastener having a stem, head and a locking pin to fix a gas inject plate to an electrode plate.

Chew suggests and/or makes obvious that bolts (52) within process chambers may advantageously replace bolts with quarter-turn fasteners (100) or the like. Refer to Chew Col. 4 line 59-Col. 5 line 3, Col. 5 lines 21-33, and Col. 5 line 60-Col. 6 line 3. Chew further makes obvious that a cover plate (104) is only needed to protect those fasteners (80, 90, 82, 84, 92) not made with a resistant material (e.g., ceramic, silicon), but are instead made of metal which would *"over time oxidize and generate unwanted particles within the thermal processing chamber environment"*. Chew expressly discloses the fact that fasteners being exposed with no cover plate (e.g., quarter-turn fastener 100) are to be made from a resistant material.

US-5,332,443 to Chew



Therefore, at the time of invention, it would have been obvious to one of ordinary skill in the art, to modify the prior art plasma process chamber assembly disclosed by Applicant (Figure 5), by advantageously replacing the bolt with a (broadly) quarter turn fastener or the like, in order to *"allow the [quarter-turn] screw 100, along with the cover plate 96, to be removed easily"* and to allow rapid disassembly of the two plate components.

As for the materials of the fastener, Chew suggests that the screw is "made from alumina ceramic", which comprises at least one and/or two of anodized aluminum and ceramic. Further, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. It is also common knowledge to choose a material that has sufficient strength, durability, flexibility, hardness, etc. for the application and intended use of that material. In the instant case, it would be readily appreciated to those of ordinary skill in the art that gas inject plates are normally made of materials compatible with plasma processes and may include but are not limited to: silicon, silicon carbide, hard anodized aluminum, etc. (as evidenced by Strang US-6,872,259 cited on PTO-892).

[9] Claims 9-11 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443 as discussed above, in even further view of Bowers US-5,795,122 or Csik et al. US-2003/0185653.

Both Applicant and Chew suggest the limitations discussed above, but appear to be silent as to obvious modifications to the quarter-turn type fastener within the plasma processing tool chamber.

Bowers suggests a solution which compensates for varying plate thicknesses by putting the second contacting surface on an adjustable, moveable, externally threaded member to be contained (i.e., "inserted") within a threaded bore of a second plate. From the teachings of Bower, one of ordinary skill in the art would recognize and appreciate the advantages of making

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the second contact surface infinitely adjustable with respect to the second object to eliminate the need for closely matched fasteners. See Bowers, Col 2 lines 5-13, 24-39.

Csik et al. likewise, suggests a second contacting surface communicating with an orthogonally-positioned pin at the end of a stem of a fastening component, said second contacting surface being provided with an external helical thread so as to provide a means for axially adjusting and positioning said second contacting surface. This axially adjustable contacting surface eliminates the need for using differently sized fastening components for a given range of thicknesses for the panels being fastened.

At the time of invention, it would have been obvious to one of ordinary skill in the art from the teachings of either Bowers or Csik et al., to modify the second contacting surface taught by Applicant and Chew, by employing a second fastening component having an external thread-gripping means (i.e., 'locking element') in order to provide means for axial adjustment -- said means allowing for a standard sized stem to be used to fasten two plates of various thicknesses (e.g., two plates having a thickness slightly out of tolerance).

[10] Claims 16-19, 26, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443 as discussed above, in even further view of David et al. US-6,267,543.

Both Applicant and Chew suggest the limitations discussed above, but appear to be silent as to a restricting/stopping element (e.g., pin) that prevents full rotation of the quarter-turn fastener, and a helical coil locking element which would restrict movement between a contacting surface and the electrode plate.

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David et al. suggests restricting elements (140,142), which prevent full rotation of a quarter-turn fastener. In fact, the examiner takes official notice that most conventional quarter turn fastener assemblies incorporate some kind of rotation restricting feature.

David et al. further suggests a locking element in the form of a helical coil (122) that would restrict movement between all parts of the assembly

At the time of invention, it would have been obvious to one of ordinary skill in the art, to employ a restricting element (pin) so as to prevent over-rotation of the quarter-turn fastener, and/or to prevent accidental disassembly which would occur might the fastener be rotated too far (e.g., multiples of 180 degrees).

It would have further been obvious, from David et al.'s disclosure, to employ a locking element in the form of a helical coil within a quarter turn fastening assembly, in order to restrict movement between essentially all parts of the assembly.

[11] Claims 18, 19, 27, 28, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admission of prior art in view of Chew US-5,332,443 as discussed above, in even further view of Campbell et al. US-6,468,925.

Both Applicant and Chew suggest the limitations discussed above, but appear to be silent as to an electrically conductive elastic element between the gas inject plate and the electrode.

Campbell et al. suggests an electrically conductive elastic element (40) positioned between a gas inject plate and electrode, so as to advantageously provide "good RF electrical contact" between the two plates, which "is highly desirable to achieve good and consistent

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deposition when processing a series of wafers within the chamber", especially when "the showerhead support electrode and the showerhead are typically made of dissimilar materials".

Conclusion

[12] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

(See enclosed PTO-892)

[13] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JAS



11/29/05

ROBERT J. SANDY
PRIMARY EXAMINER